

ANNA UNIVERSITY, CHENNAI

AFFILIATED INSTITUTIONS

R-2009

M.ARCH. (REAL ESTATE DEVELOPMENT)

SEMESTER I

SL NO.	COURSE CODE	COURSE TITLE	L	T	P	C
<b>THEORY</b>						
1.	MR 9211	<a href="#">Introduction to Real Estate Development and Design</a>	3	0	0	3
2.	MR 9212	<a href="#">Urban policy and development regulation</a>	3	0	0	3
3.	MR 9213	<a href="#">Urban design principles &amp; Retrofitting of buildings / properties [and adaptive reuse – methods &amp; mechanisms]</a>	3	0	0	3
4.	MR 9214	<a href="#">Construction Planning, Scheduling &amp; Control</a>	3	0	0	3
5.	*****	Elective – 1	*	*	*	3
<b>STUDIO</b>						
6.	MR 9215	<a href="#">Project – 1 Corporate Development, Land Development</a>	0	0	12	6
<b>Sub Total</b>						<b>21</b>

SEMESTER II

SL NO.	COURSE CODE	COURSE TITLE	L	T	P	C
<b>THEORY</b>						
7.	MR 9221	<a href="#">Real estate Finance</a>	3	0	0	3
8.	MR 9222	<a href="#">Law relating to Land &amp; property procurement</a>	3	0	0	3
9.	MR 9223	<a href="#">Management Information system for Real Estate Business</a>	3	0	0	3
10.	MR 9224	<a href="#">Valuation and arbitration in Real Estate</a>	3	0	0	3
11.	*****	Elective – 2	*	*	*	3
<b>STUDIO</b>						
12.	MR 9225	<a href="#">Project – 2 Mega Project Township Land and building</a>	0	0	12	6
<b>Sub Total</b>						<b>21</b>

INTERNSHIP - 4 WEEKS DURING SUMMER VACATION

**SEMESTER III**

SL NO.	COURSE CODE	COURSE TITLE	L	T	P	C
<b>THEORY</b>						
13.	MR 9231	<a href="#">Turnkey Approach to corporate commercial and residential development</a>	3	0	0	3
14.	MR 9232	<a href="#">Construction project management</a>	3	0	0	3
15.	MR 9233	<a href="#">Contract law and regulation</a>	3	0	0	3
16.	MR 9234	<a href="#">Project Formulation &amp; Appraisal</a>	3	0	0	3
17.	*****	Elective - 3	*	*	*	3
<b>STUDIO</b>						
18.	MR 9235	<a href="#">Project – 3 Specialized Activities SPV – infra structure / SEZ</a>	0	0	16	8
19.	MR 9236	<a href="#">Dissertation</a>	0	0	6	3
<b>Sub Total</b>			<b>24</b>			

**SEMESTER IV**

SL NO.	COURSE CODE	COURSE TITLE	L	T	P	C
20.	MR 9241	<a href="#">Thesis</a>	0	0	16	8
21.	MR 9242	<a href="#">Seminar / workshop on selected theme for each scholar</a>	0	0	2	1
<b>Sub Total</b>			<b>9</b>			
<b>Total no of credits required for the award of the degree</b>			<b>75</b>			

**LIST OF ELECTIVES FOR M.ARCH – (REAL ESTATE DEVELOPMENT)**

**SEMESTER – I**

SL NO.	COURSE CODE	COURSE TITLE	L	T	P	C
22.	MR 9251	<a href="#">Elements of Sociology &amp; Economics</a>	3	0	0	3
23.	MR 9252	<a href="#">Developmental Economics</a>	3	0	0	3

**SEMESTER – II**

SL NO.	COURSE CODE	COURSE TITLE	L	T	P	C
24.	MR 9253	<a href="#">Services in high rise building Development</a>	3	0	0	3
25.	MR 9254	<a href="#">Heritage properties &amp; Conservation practices</a>	3	0	0	3
26	MR 9255	<a href="#">Environmental Impact Assessment Techniques.</a>	3	0	0	3

**SEMESTER – III**

SL NO.	COURSE CODE	COURSE TITLE	L	T	P	C
27.	MR 9256	<a href="#">Ecology and Landscape</a>	3	0	0	3
28.	MR 9257	<a href="#">Capital markets and Real Estate</a>	3	0	0	3
29.	MR 9258	<a href="#">Performance evaluation of buildings.</a>	3	0	0	3

**ANNA UNIVERSITY CHENNAI : : CHENNAI – 600 025**

**Affiliating Institutions**

**M.ARCH. (Real Estate Development) CURRICULUM – R 2009**

**PART-TIME**

**SEMESTER I**

<b>Sl. No.</b>	<b>Course Code</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
1	MR 9211	Introduction to Real Estate Development and Design	3	0	0	3
2	MR 9212	Urban policy and development regulation	3	0	0	3
3	MR 9213	Urban design principles and retrofitting of buildings / properties (and adaptive reuse-methods and mechanisms)	3	0	0	3
4	MR 9214	Construction Planning, Scheduling and Control	3	0	0	3
						<b>12</b>

**SEMESTER II**

<b>Sl. No.</b>	<b>Course Code</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
5	MR 9221	Real Estate Finance	3	0	0	3
6	MR 9222	Law relating to land and property procurement	3	0	0	3
7	MR 9223	Management information system for Real Estate Business	3	0	0	3
8	MR 9224	Valuation and arbitration in Real Estate	3	0	0	3
						<b>12</b>

**SEMESTER III**

<b>Sl. No.</b>	<b>Course Code</b>	<b>Course Title</b>	<b>L</b>	<b>S</b>	<b>P</b>	<b>C</b>
9	MR 9231	Turnkey approach to corporate commercial and residential development	3	0	0	3
10	MR 9233	Contract Law and Regulation	3	0	0	3
11	xxxxx	Elective – I	3	0	0	3
12	MR 9215	Project – I – Corporate Development, Land Development	0	0	12	6
						<b>15</b>

**SEMESTER IV**

<b>Sl. No.</b>	<b>Course Code</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
13	xxxxx	Elective-II	3	0	0	3
14	MR 9236	Dissertation	0	0	4	2
15	MR 9225	Project II – Mega Project Township, Land and Building	0	0	12	6
						<b>11</b>

**SEMESTER V**

<b>Sl. No.</b>	<b>Course Code</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
16	MR 9234	Project formulation and appraisal	3	0	0	3
17	MR 9232	Construction and Project Management	3	0	0	3
18	MR 9235	Project – III - Specialized activities – SPV – infrastructure / SEZ	0	0	14	7
						<b>13</b>

**SEMESTER VI**

<b>Sl. No.</b>	<b>Course Code</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
19	xxxxx	Elective - III	3	0	0	3
20	MR 9242	Seminar / workshop on selected theme for each scholar	0	0	2	1
21	MR 9241	Thesis	0	0	16	8
						<b>12</b>

**LIST OF ELECTIVES FOR M.ARCH – (REAL ESTATE DEVELOPMENT)**

<b>SL NO.</b>	<b>COURSE CODE</b>	<b>COURSE TITLE</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
22.	MR 9251	Elements of Sociology & Economics	3	0	0	3
23.	MR 9252	Developmental Economics	3	0	0	3

24.	MR 9253	Services in high rise building Development	3	0	0	3
25.	MR 9254	Heritage properties & Conservation practices	3	0	0	3
26.	MR 9255	Environmental Impact Assessment Techniques	3	0	0	3

27.	MR 9256	Ecology and Landscape	3	0	0	3
28.	MR 9257	Capital markets and Real Estate	3	0	0	3
29.	MR 9258	Performance evaluation of buildings	3	0	0	3



**AIM:**

To obtain an overview of the policy implication at national and state level and their relevance at the micro level.

**OBJECTIVES:**

- To understand the implications of the urbanisation on urban land.
- To capture the form and pattern of cities growth and market prices.
- To provide inputs for keeping tag of quality even while trying to make profit taking note of various regulatory regimes on land and development present in the country.

**UNIT I UNDERSTANDING URBAN GROWTH 9**

Basics of Urban Planning- dynamic forces driving Urban growth – Urban spatial configuration. Regional influences on settlement hierarchy.

**UNIT II LOCATIONAL DETERMINANTS 6**

Land use structure – Community & Neighbourhood Dynamics - Urban Land rent & Location Theories

**UNIT III QUALITY OF DEVELOPMENT 10**

Urban Quality – degeneration –Urban Renewal – regeneration - Sustainable development

**UNIT IV URBAN POLICIES 10**

Government Policies – on public & private housing – Urban Fiscal Policies – Property Taxation – local Govt. Finance – Public policies on land & real estate – Impact of Govt. Regulations

**UNIT V PUBLIC PRIVATE PARTICIPATION 10**

System drawn and informal participation, various models of public participation, participatory plan formulation, resource mobilisation, maintenance and management.

**TOTAL: 45 PERIODS**

**TEXT BOOKS:**

1. David T Betto, "The Voluntary city Markets, Communities & Urban Planning" (2006)
2. Frieden, Bernard & Lyne Sagalyn, "Enterpreneurial cities & marverik developers, deal amking, getting & spending", (1990) MIT. Press, U.S.A

**REFERENCES:**

1. Jonathan Barnett; "Urban design as a public policy", (1974), Mc graw hill book co; New York.
2. Robert Freestone; "Urban Planning in a changing world – the 20<sup>th</sup> century experience 2000; Taylor & Francis pub. U.K.
3. John Ratcliffe; "Urban Planning & Real estate development, (2004); Taylor & Francis pub. U.K.



**MR 9213 URBAN DESIGN PRINCIPLES & RETROFITTING OF BUILDINGS / PROPERTIES [AND ADAPTIVE REUSE – METHODS & MECHANISMS] L T P C  
3 0 0 3**

**AIM:**

To impress upon the professionals to look at the Real Estate from a broader perspective of urban aesthetics rather than islands of excellence / dreary development.

**OBJECTIVES:**

- To provide adequate inputs to understand the larger implications of the property as an integral part of the urban fabric.
- To demonstrate the value addition to property development by adhering to urban aesthetics as a leverage for price mechanism.
- Emphasizing the need for sustainability of the existing morphology through adaptive reuse pr prolonging the life for longer time with consistency in price.

**UNIT I INTRODUCTION TO URBAN DESIGN THEORY 6**

City as a three – dimensional entity, study of volumes & open spaces, a brief historic review of the development of the urban design discipline and principles.

**UNIT II ELEMENTS OF URBAN DESIGN 10**

Urban form as determined by the inter-play of masses, voids, building typology, scale, harmony, symmetry, colour, texture, light & shade, dominance, height, urban signage & graphics, organization of spaces & their articulation in the form of squares, streets, vistas & focal points, image of the city & its components.

**UNIT III PHYSICAL & NON –PHYSICAL DETERMINANTS OF URBAN FORMS 10**

Activity & Morphology of space, form, size & structure of cities, related geometry co-related with their determinants, case studies of urban design characteristics of cities in India & abroad, issues for public intervention.

**UNIT IV RETROFITTING OF BUILDINGS / PROPERTIES AND ADAPTIVE REUSE 10**

Methods & mechanisms – Urban Renewal – Rehabilitation, Redevelopment & Conservation – Basic principles, values, conservation importance of sites, area, typology, techniques of conservation.

**UNIT V CASE STUDIES 9**

Legal & administrative aspects, policies, charters, case studies of proposals for conservation / adaptive reuse from India & Abroad.

**TOTAL: 45 PERIODS**

**TEXT BOOK**

1. Jonathan Barnett, "Designing cities without designing building", (1982), Harper & Row, New York.
2. Edmond Bacon, "Design of cities", (1976), revised edition, Viking Penguin Inc; U.S.A.

**REFERENCES:**

1. Jon Lang, "Urban design" – a typology pf procedures & products 2005, Glsevier, North America.
2. Gcoffrey Broadbent, "Emerging concepts in Urban Space Design-(1995), Jayker & Fravels.
3. Cliff Monghtin, "UD-Street & Squace," (2003), Architectural Press.

**AIM:**

To emphasize the need to integrate the building design process into development cycle.

**OBJECTIVES:**

- Packing adequate knowledge to work with multi disciplinary team.
- To make aware of the scheduling and accounting issues which will affect the cost.
- Capacity to identify and develop the data base for quality, control and safety.

**UNIT I CONSTRUCTION PLANNING 8**

Basic concepts of development of construction plans – Choice of Technology & Construction method - defining Work Tasks – Precedence relationships among activities – Estimating Activity Durations – Resource requirements for work – Coding Systems.

**UNIT II SCHEDULING PROCEDURE & TECHNIQUES 12**

Relevance of Construction Schedule – Critical Path method – Calculations for critical path Scheduling – Presenting Project Schedules – Activity Float. Critical Path scheduling for activity - on –node with leads. Lags & Windows – Calculations for scheduling with lags & windows – resource oriented Scheduling – scheduling with resource constraints and precedence – use of advanced scheduling techniques – scheduling with uncertain durations – calculations for Monte – Carlo Schedule Simulations – crashing and time-cost trade-offs – scheduling in poorly structured problems – improving the scheduling process.

**UNIT III COST CONTROL MONITORING & ACCOUNTING 10**

The cost control problem – the project Budget – Forecasting for activity cost control – Financial accounting systems and cost accounts – Control of project Cash Flows – Schedule control – Schedule & Budget Updates – Relating cost & Schedule information.

**UNIT IV QUALITY CONTROL & SAFETY DURING CONSTRUCTION 7**

Quality & Safety Concerns in construction – Organising for Quality & Safety – work and material specifications -Total quality control – quality control by statistical methods – statistical quality control by sampling and Variables – Safety.

**UNIT V ORGANISATION & USE OF PROJECT INFORMATION 8**

Types of project information – accuracy and use of information – computerized organisation & use of information – organizing information in databases – relational model of databases – other conceptual models of databases - centralized databases. Management systems – databases & application programmes - Information transfer and flow.

**TOTAL: 45 PERIODS**

**TEXT BOOK:**

1. John Rodger Illingworth, (2000), “Construction methods & Planning”, Taylor & Francis, U.K
2. Frank Harris, “Modern Construction management”, (2006), Blackwell publishing, U.S.A.

**REFERENCES:**

1. Jimmie W. Hinze, “Construction planning & scheduling” (1997), Pretince hall. USA.
2. Calin M Popescn, “Project Planning, Scheduling & Control in Construction (1995), John Wiley & Sons. USA.
3. James O’ Brien, “CPM in Construction Management” (2006) Mc.Graw hill, USA.

<b>MR 9215</b>	<b>PROJECT – 1 CORPORATE DEVELOPMENT LAND DEVELOPMENT</b>	<b>L T P C 0 0 12 6</b>
----------------	---	-----------------------------

Projects on Corporate Development as well as Land Development to sensitize students to the issues of land and corporate development is to be undertaken

**TOTAL: 180 PERIODS**

<b>MR 9221</b>	<b>REAL ESTATE FINANCE</b>	<b>L T P C 3 0 0 3</b>
----------------	----------------------------	----------------------------

**AIM:**

To provide an insight into the financial aspects of Real estate.

**OBJECTIVES:**

- Basic analytical methods for investment and financing in properties.
- Influences of international modes of decision making.
- Understanding risks in real estate as a tool in mortgaging and investment performance.

<b>UNIT I</b>	<b>FUNDAMENTAL CONCEPTS</b>	<b>8</b>
Principles, analytical methods and tools useful for making investment and finance decisions regarding individual properties (Commercial, Industrial, Residential)		

<b>UNIT II</b>	<b>NON CONVENTIONAL FINANCE</b>	<b>7</b>
Institutional real estate decision making (pension funds, banks, life insurance companies, investment trusts, joint venture)		

<b>UNIT III</b>	<b>RISK ANALYSIS</b>	<b>10</b>
Forecasting cash flows and estimating risk in real estate investments		

<b>UNIT IV</b>	<b>SECURITIZATION</b>	<b>10</b>
Development of real estate securitization and structured financing including mortgage contract – Mortgage and options including calculation of various durations to evaluate risk sharing		

<b>UNIT V</b>	<b>PRICING AND BENCH MARKING</b>	<b>10</b>
Equilibrium pricing of assets clauses – investment performances measurement – bench marking – counseling for purchase and sale.		

**TOTAL: 45 PERIODS**

**TEXT BOOK**

1. Terrence M Clauritie, “Real estate finance: Theory & practice”, (2005), Prentice hall, U.S.A
2. Steve Bergsman, “Maverick real estate financing”, (2006), John Wiley & Sonss Inc, New Jersey, U.S.A.



**MR 9223**

**MANAGEMENT INFORMATION SYSTEM  
FOR REAL ESTATE BUSINESS**

**L T P C  
3 0 0 3**

**AIM:**

To develop a comprehensive global information system in the area of Real estate business.

**OBJECTIVES:**

- To develop easily updatable and retractable information system Architecture for Real estate business.
- Modular system for each layer of the business cycle.
- Conceiving and put in practice the facility management for managing different types of property.

**UNIT I INTRODUCTION TO INFORMATION SYSTEM 4**

Information Systems – Establishing the framework – Business model – Information system architecture – Evolution of Information Systems

**UNIT II SYSTEM DEVELOPMENT 9**

Modern Information System – System development Life cycle – Structured Methodologies – Designing computer based methods – Procedures, control, designing structured programme – development of urban forms, Land use planning process, property development process.

**UNIT III INFORMATION SYSTEMS 15**

Integrated construction management Information System – Project Management Information System – Functional Areas – Finance, Marketing, Production – Personnel Levels – DSS, EIS, ES-Comparison, and Concepts & Knowledge Representation – Managing International Information System – Property & Facility Management – Management of different types of property developments – formulating management plan – Tools & Techniques in managing physical assets – corporate business plan.

**UNIT IV IMPLEMENTATION & CONTROL 7**

Control & testing - Detection of error – validating – Cost Benefit Analysis – Assessing the value & risk of Information System – Outsourcing – benchmarking.

**UNIT V SYSTEM AUDIT 10**

Software engineering qualities – Design –Production & Service – Software Specification – Software metrics – Software quality assurance – systems methodology – objectives – time & logic – Knowledge & Human Dimension – Software lifecycle models – Verification & Validation.

**TOTAL: 45 PERIODS**

**TEXT BOOKS**

1. Michael E Whiteman, "The handbook of Information systems research", (2004), Idea group Inc (IGI), U.S.A.
2. Hossein Bidgoli, "Intelligent Management support systems', (1998), Quorum, Greenwood. UK.

**REFERENCES**

1. Mark Rowh, "Careers in R.E, 2002, Mc – Graw hill professional, NT.
2. Peter Wyatt, "GIS in land & property management, 2003, Taylor & francis.
3. Jmaes. O' Brien, "M.I.S" (2008) Mc. Graw Hill , USA.

**AIM:**

Build up a cadre of professional Architects for valuation and arbitration in the long run.

**OBJECTIVES:**

- To teach the techniques of valuation of properties.
- To provide the required input to create space for specialization in this area.
- To strengthen the defence in presenting the procedural rules, dispute resolution.

**UNIT I FUNDAMENTAL PRINCIPLES AND CONCEPT OF VALUE 7**

Open market value – Property and Property Market – Property as an Investment.

**UNIT II NATURE AND SCOPE OF VALUATION 9**

Valuation function – Role and functions of valuer – Scope – Value Theory – Process.

**UNIT III DETERMINATION OF VALUES 9**

Techniques to determine the values for loan, sale and insurance – Professional standards – report writing – Leasehold Valuation – different methods.

**UNIT IV EVALUATION OF INCOME AND PROPERTY 10**

Discounting and compound interest – Income Estimation and forecasting – debt financing – capitalization and discount rates – tax considerations – introduction to mortgage equity analysis – financial residual techniques.

**UNIT V ARBITRATION 10**

Arbitration agreement – statement of defense – proceedings – Arbitral Body – Multi – party Arbitration – Independence of arbitrators – acceptance – forwarding act – procedural rules – disputes – settlements – arbitral award – Time Limit – Contents of award – Costs of Proceedings.

**TOTAL: 45 PERIODS**

**TEXT BOOKS**

1. "Valuation of Immovable properties" (Under Direct Taxes) edn(2002), Grish Chand Gupta, Bharath Law House, New Delhi-83.
2. "Law Relating to Arbitration and A.D.R, New Edn(2002), N.K. Acharya's Asia Law House, Hyderabad, India.

**REFERENCES**

1. Ko Wang, Real estate valuation theory, (2001) Kluwer Academic publishers, S. America.
2. Howard C Gelbtuch, "Real estate valuation in global markets", (1997), Appraisal institute.
3. Aswanth Damodaran, Investment Valuation (2002), John Wiley & Sons, UK.

**MR 9225**

**PROJECT – 2 MEGA PROJECT TOWNSHIP  
LAND AND BUILDING**

**L T P C  
0 0 16 8**

Large scale corporate, commercial & mixed use of development including issues involved in various stages of construction, financial implications and saleability.

**TOTAL: 240 PERIODS**

**INTERNSHIP**

During the summer, students are placed into an internship / practical experience. This provides a unique opportunity for the students to gain hands- on work experience in the real estate industry, with a company in the same area as their desired career path. The Real Estate Internship Program aims to provide real world learning experience of both the private & public real estate organizations. Industry specialization areas include development activities, professional consultancy services, fund management as well as policy exposure in Government agencies

**MR 9231**

**TURNKEY APPROACH TO CORPORATE COMMERCIAL & RESIDENTIAL DEVELOPMENT**

**L T P C  
3 0 0 3**

**AIM:**

To create a platform for encoring qualified professionals to take up Turkey developments.

**OBJECTIVES:**

- To acquire additional skills from being a mere designer to negotiator and a person capable of conflict resolutions.
- Adequately equipped to manage properties and provide advice on strategic planning of real estate investment.
- To get know about the leverage the real estate could provide in the overall development process.

**UNIT I**

**9**

Real Estate Marketing & Negotiation – Fundamentals of Real Estate Marketing & Negotiation – concepts - Principles & Practices in marketing & testing of various types of real estate developments. Nature of real estate conflicts – disputes - negotiation theory - principles - skills - Practice & application of negotiation skills.

**UNIT II**

**8**

Real Estate Management – Basic concepts and fundamental principles of property & facility management – tenure arrangements – Relevant Legislations – Ownership – Management of different types of Property developments

**UNIT III**

**10**

Real Estate Practice & Ethics – Exploring common business forms – development of real estate practices – legal - ethical duties of a real estate professional – strategic

planning – marketing professional services – professional liability – ethical theory – ethical issues in real estate business – expert witness in court testimonies.

**UNIT IV** **10**

Real Estate Investment – Skills to analyse a real estate investment problem – real estate investment objectives – leasing structure – property income analysis – characteristics of real estate returns and risks – financial leverage – after tax returns – diversification – equity versus debt investment – analysis of real estate asset – portfolio performance – real estate equity investment strategies.

**UNIT V** **8**

Turnkey Approach – System - contractual actions – testing - training – logistical - operational support – procurement process – management contract –licensing

**TOTAL: 45 PERIODS**

**TEXT BOOKS:**

1. David M Geltener - Commercial Real estate Analysis & Investments (2000), South western Educational Publication.
2. CT. Walker, “Privatised infrastructure: The Build, Operate, Transfer approach”, (1995), Thomas Telford, Publishing, Westminster, London..

**REFERENCES**

1. JW Rully, “The language of Real estate, “, (2000), Dearborn Real estate education, Chicago.
2. Mathew S Chan, Real estate partnership & alliance, Ascend beyond Publishing, Columbus, USA.
3. Robert Alan Corporate Real estate Development (1976), Rowan & Littlefield Publication.

**MR 9232**

**CONSTRUCTION PROJECT MANAGEMENT**

**L T P C**  
**3 0 0 3**

**AIM:**

To be capable of appreciating the construction related issues that are to be kept in mind while in the business of real estate.

**OBJECTIVES:**

- Knowledgeable enough to advise clients on selection of professional services.
- Coperationalising the design and construction through scheduling the construction activity.
- Be clear about cost control methods and their implication in reality market.

**UNIT I** **9**

The Owner’s Perspective – Introduction – project life cycle – major types of construction – selection of professional services – construction contractors – functioning of constructed facilities - legal and regulatory requirements – the changing environment of the construction industry – the role of project managers



**UNIT II** **9**  
Organising for Project Management – What is project management – trends in modern management – Strategic planning and project programming – Effects of project risks on organization – organisation of project participants – traditional designer – constructor sequence - professional construction management – Owner – builder – operation – turnkey operation – leadership and motivation for the project team – Interpersonal behaviour in project organisation – perceptions of owners and contractors

**UNIT III** **9**  
The design and construction process – design and construction as an integrated system – innovation and technological feasibility – design methodology – functional design – physical structure – geotechnical engineering – investigation – construction site environment – value engineering – construction planning – Industrialized construction and Prefabrication – Computer aided engineering.

**UNIT IV** **9**  
Labour, Material and Equipment Utilization – Historical perspective – Labour production – factors affecting job site – Productivity – Labour relations in construction – Problems in collective bargaining – Materials management – Materials procurement and delivery Inventory control – Tradeoffs of cost in material management – Construction Equipment – Choice of Equipment – Standard production rates – Construction Processes – Queues and Resource Bottlenecks.

**UNIT V** **9**  
Cost Estimation – Costs associated with construction facilities – Approaches to cost estimation – Type of construction – Cost estimates – Effect of scale on construction cost – Unit cost – Method of Estimation – Methods for allocation of Joint costs – Historical cost data – Cost indices – Applications of Cost Indices to estimating – Estimate based on Engineers List of Quantities – Allocation of Construction costs over time – Computer aided Cost estimation - Estimation of Operating costs.

**TOTAL: 45 PERIODS**

**TEXT BOOKS:**

1. Frank Haris, Modern Construction Management (1988), Vlackwell Publications, U.K.
2. Richard H Clough Construction Project Management (2000), John Wiley & Sons, U.S

**REFERENCES**

1. Denny Mc George & Angela Palmer, “Construction Management”, (2002), 2<sup>nd</sup> ed. Blackwell science, Oxford.
2. P.K. Joy Construction Management (2005) Macmillan, New Delhi.
3. B. Sengupta & H Guha Construction management and Planning (1995), Mc Graw Hill publishing company ltd, New Delhi.

**AIM**

To develop understanding and skills to provide advise to the client in this area.

**OBJECTIVE**

- Construction contracts, bidding evaluation.
- Legal requirements of land and its development.
- Adequately informed to overcome labour related issues.

**UNIT I****9**

Construction Contracts – Indian Contracts Act – Elements of Contracts – Types of Contracts – Features – Suitability – Design of Contract Documents- International Contract document - Standard Contract Document – Law of Torts.

**UNIT II****9**

Tenders – Prequalification – Bidding – Accepting – Evaluation of Tender Form – Technical – Contractual – Commercial points of View – Contract Formation and Interpretation – Potential Contractual Problems – World Bank Procedures and Guidelines

**UNIT III****9**

Arbitration – Comparison of actions and laws – Agreements – Subject Matter - Violations – Appointment of Arbitrators - Conditions of Arbitration – Powers and Duties of Arbitrator – Rules of Evidence – Endorsement of Award – Costs.

**UNIT IV****9**

Legal Requirements – Insurance and Bonding – Laws governing sale- Purchases and use of Urban and Rural land – Land revenue codes- Tax Laws – Income tax – Sales tax – Excise and customs duties and their influence on construction –costs – Legal Requirements of Planning – Property Law – Agency Law – Local Government laws for Approval – Statutory Regulations

**UNIT V****9**

Labour Regulations – Social Security – Welfare Legislation – Laws relating to wages – Bonus and Industrial disputes – Labour Administration – Insurance and safety Regulations – Workmen’s Compensation A ct – Other Labour Laws.

**TOTAL: 45 PERIODS****TEXT BOOKS:**

1. Barlow Burke, “Law of R.E brokers”, 1992, Aspen Publications.
2. James Karp, RE law, 2003, Dearborn Real estate education.

**REFERENCES:**

1. Catherine Elliioth, Contract Law (2003) Longmen Publications.
2. Richard Willmot Constructions Contracts – Law & Practice (2006), Oxford University Press, U.S.A.
3. Daniel F Hinkel, “Practical R Elano”, 2003, Thomas Delimar Learning.

**AIM**

Confidence building for making the projects saleable, ultimately.

**OBJECTIVES**

- To prepare projects based on realizable cost and targets within the stipulated time.
- To develop skills for the smooth implementation.
- To be capable of appraising the project proposals from the financial cost and benefit angles of the concerned company / organisation.

**UNIT I****9**

Project Formulation / Planning – Methodology for project identification & formulation, detailed project report, feasibility studies, techniques of financial appraisal, payback period, IRR, DCF, NPV, CBR, financial cost – benefit analysis – economic cost benefit analysis.

**UNIT II****6**

Pre – Implementation Planning Phase – Work breakdown structure – network analysis – CPM, PERT, resource leveling and allocation, time – cost trade –off aspects.

**UNIT III****9**

Introduction to project management – Importance of project management – reasons for shortfall in performances – scientific management – life cycle of a project.

**UNIT IV****12**

Project Management – Planning & Control, Human Aspects – Development of project networking- critical path, PERT & CPM, Project organization, contracting, Procurement and recruitment Budget,, Fund flow statement, stabilization & finish. Organisation of project , matrix organization, task forces, project teams, monitor & control of project, Project management strategies, tools & techniques, Classical persuasive & non-persuasive techniques. New techniques of management by Objectives (MBO). Integrated reporting system, flow diagrams, bar charts, milestone charts, CPM & PERT.LOB... Techniques of monitoring of development works – standard oriented cost control, turn key system, vertical production method, inventory cost control techniques & unified status, index techniques. Project monitoring – Management Information Systems, Environmental care, Safety.

**UNIT V****9**

Project Appraisal Techniques –Technical, Financial, Organisational criteria. Appraisal Criteria (NPV/B/C. Ratio / I.R.R – Financial Analysis –Capital Costs, Financial plans, Operation costs, Projections of costs & revenues, Financial Viability, Debt servicing, Tariff & Revenues, Income & Expenditure Statements, Project balance sheets, Rate of returns. Special Cost benefit Analysis – Rationale for SCBA, UNIDO Approach.

**TOTAL: 45 PERIODS****TEXT BOOKS:**

1. GE Greer, "Investment analysis for R E decision", (2003), Dearborn R E education.
2. K.Lyons, Impact assessment & project appraisal, (2001), Beach tree publishing, England.

## REFERENCES

1. UNIDO (1972) "Guidelines for project evaluation", UN, New York.
2. N. Imboden, A Management appraisal to Project Appraisal & Evaluation (1978), Development centre, Paris.
3. Puneekar S.D, Aspects of evaluation & Project Appraisal, Popular Prakashan Pvt. Ltd.

**MR 9235**

**PROJECT – 3**

**L T P C**  
**0 0 16 8**

A project on specialized activities, SPV (Special Purpose Vehicle) – Infrastructure and the Special Economic Zone (SEZ) is to be undertaken

**TOTAL: 240 PERIODS**

**MR 9236**

**DISSERTATION**

**L T P C**  
**0 0 6 3**

The dissertation provides scope for independent study opportunity to explore specific areas of interest pertaining to Real Estate Development. The scholar shall select a topic of his / her choice with the approval of the HOD and write a comprehensive discourse.

**TOTAL: 90 PERIODS**

**MR 9241**

**THESIS**

**L T P C**  
**0 0 16 8**

Thesis gives an opportunity to the scholar to showcase his / her prowess in the genesis and conceptualisation of the all round competence in real estate design. It is a normal seminal work culminating into a comprehensive real estate design and development. The integration of the implementation process, shall be demonstrated in the ultimate analysis.

**TOTAL: 240 PERIODS**

**MR 9242 SEMINAR / WORKSHOP ON SELECTED THEME L T P C**  
**FOR EACH SCHOLAR 0 0 2 1**

A seminar / project on any one of the following topics is to be presented

**TOTAL: 30 PERIODS**

**(Any one)**

**1. NEW TOWN & INFRASTRUCTURE PROJECT**

**UNIT I 9**

Rationale for Planning for New Communities – location criteria for Township and New towns – Concept of Townships and Newtown Plans – Exposure to international examples, planning standards and norms

**UNIT II 9**

Planning for communication – Telecommunication – cable T.V., -Wireless – digital – inter and intranet facilities – outline of transportation and networking in urban areas.

**UNIT III 9**

Planning for Social Infrastructure – Health – Education – Religion – Recreation – Cultural – Planning standards – spatial standards – Hierarchy of provisions – Types of Units and scales - Critical issues in Public and private development – ownership – management and maintenance

**UNIT IV 9**

Economics of services and networks – Infrastructure pricing and financing – tax and grant – user charges – public – private partnership – BOT, BOLT, BOOT etc. – Municipal bonds – subsidies

**UNIT V 9**

Capacity building - Environmental issues –Sustainability concerns Review of programs of DFID, WORLD BANK in India

**2. PRINCIPLES OF INSURANCE AND LOSS ASSESSMENT**

**UNIT I 10**

Introduction to Financial Planning – Communication and Internal Analysis

**UNIT II 12**

Risk – The problem of risk – Introduction to risk management – Risk management application – managing personal and property based risks - Risk assessment: rating and underwriting.

**UNIT III 10**

The impact of competition on pricing; the impact of legislation.

**UNIT IV 7**

Insurance – the insurance device – introduction to private insurance – insurance on the person – Personal property and Liability insurance – Social insurance – insurance programs.

**UNIT V 6**

Legal principles of contracts: insurance contracts

### **3. ADVANCED CONSTRUCTION TECHNIQUES**

#### **UNIT I**

**12**

Substructure Construction – Box Jacking – Pipe Jacking – Underwater Construction – Construction of Diaphragm walls and basement – Tunneling techniques – piling techniques – driving well and caisson – sinking cofferdam – cable anchoring and grouting – driving diaphragm – sheet piles – laying operations for built – up offshore system – shoring for deep cutting – large reservoir construction with membranes and earth system – well points – dewatering and stand by plant equipment for underground open excavation

#### **UNIT II**

**9**

Superstructure Construction – Vacuum dewatering of concrete flooring – concrete paving technology – techniques of construction – for continuous concreting operation – in tall buildings – of various shapes – and varying sections – launching techniques – suspended formwork

#### **UNIT III**

**9**

Erection techniques of tall structures – large span structures – launching techniques for heavy decks – in situ pre - stressing in high rise structures – aerial transporting – handling – erecting light weight components on tall structures – erection of lattice towers - rigging of transmission line structures – construction sequences in cooling towers – silos – chimneys – skyscrapers – bow string bridges – cable stayed bridges

#### **UNIT IV**

**9**

Advanced techniques in offshore construction practice – construction sequences and methods in domes and pre - stressed domes - support structure for heavy equipment and conveyor machinery in heavy industries – erection of articulated structures – braced domes and space decks.

#### **UNIT V**

**6**

Repair Construction – Mud Jacking grout thro' slab foundation – micro piling for strengthening floor and shallow profile - pipeline laying – protecting sheet piles – screw anchors – sub grade waterproofing – advanced techniques and sequence in demolition and dismantling.

## LIST OF ELECTIVES

### SEMESTER – I

<b>MR 9251</b>	<b>ELEMENTS OF SOCIOLOGY &amp; ECONOMICS</b>	<b>L T P C</b>
		<b>3 0 0 3</b>

#### **AIM:**

To look at the real estate development within social, economic frame work of the community it serves.

#### **OBJECTIVES:**

- Understanding the social values and life styles.
- Urbanization and socio – economic issues of employment, demand for space in human settlements.
- Appreciating the formal and informal mechanism in real estate resulting out of socio economic characteristics.

#### **UNIT I DEFINITION AND SCOPE OF SOCIOLOGY 10**

Basic concepts in the study of the society – ethnic groups – social groups – social institutions – social stratification - order and change – social control - Effects of physical environment on behavior. Sociology of India – Basic features of the Indian Society and culture – language, religion, caste and tribes. Social problems of the urban community – crime, delinquency and violence.

#### **UNIT II URBAN AND RURAL VARIATION 6**

Rural community and relationship with the urban community. Neighbourhood concepts – implications & limitations in the Indian context.

#### **UNIT III URBAN AND INDUSTRIAL SOCIOLOGY 9**

Urbanisation and its social aspects – rural – urban migration, Concept of industrial society, social aspects of industrialization.

#### **UNIT IV DEFINITION & SCOPE OF ECONOMICS 10**

Central problems of economics, micro and macro economic decisions. Production – theory, factors and the scale of production. Internal – external economics – division of labour, Theory of demand – supply – market mechanism – imperfection of competition.

#### **UNIT V ECONOMIC DEVELOPMENT & ROLE OF THE GOVERNMENT 10**

Theory of income, employment, money, national income (GNP, NNP), -Fiscal policy – inflation – Indian financial institutions. Problems of economic growth, development, characteristics of under – developed economics, balanced growth and industrialization, population problems, technological change and innovations, long term economic plans, economics of urbanization and real estate.

**TOTAL : 45 PERIODS**

#### **TEXT BOOK**

1. Jens Beckert, "International Encyclopedia of economic sociology", (2006), Routledge, Oxford, U.K.
2. Raghendra Jha, "Modern Public Economics", (1997), Routledge, Oxford, U.K.

## REFERENCES

1. C.N. Shankar Rao - Sociology – An Introduction to Social Thought (2002). Chand & Co. New Delhi
2. Introduction to Sociology, Kitab Mahal New Delhi, Vidya Bhusan & D.R.Sachadew (2005).
3. K.K DEWETT, Modern Economic Theory (2002), Shyamal Charitable Trust, New Delhi.

**MR 9252**

**DEVELOPMENTAL ECONOMICS**

**L T P C**  
**3 0 0 3**

### AIM:

To see the links between macro economic non spatial decisions on property development and the demand spectrum.

### OBJECTIVES:

- Inputs in Development economics.
- Poverty as an inevitable aspect of development spectrum.
- Human development factors at national and international level and economic growth.

### **UNIT I BASIC PRINCIPLES AND CONCEPTS 10**

The Meaning and Measurement of Economic Development - Economic Development in Historical Perspective - Characteristics and Institutions of Developing Countries – global change - Theories of Economic Development

### **UNIT II POVERTY ALLEVIATION & INCOME DISTRIBUTION 7**

Poverty, Malnutrition, and Income Inequality - micro enterprises, policies and schemes of poverty alleviation under five year plans.

### **UNIT III FACTORS OF GROWTH 10**

Population and Development - Employment, Migration, and Urbanization - Education, Training, and Human Capital - Capital Formation, Investment Choice, Information Technology, and Technical Progress - Entrepreneurship, Organization, and Innovation - Natural Resources and the Environment: Toward Sustainable Development.

### **UNIT IV THE MACROECONOMICS AND INTERNATIONAL ECONOMICS OF DEVELOPMENT 9**

Monetary, Fiscal, and Incomes Policy, and Inflation - Balance of Payments, Aid, and Foreign Investment - External Debt Crisis - International Trade

### **UNIT V DEVELOPMENT STRATEGIES 9**

Development Planning and Policy Making: The State and the Market - Stabilization, Adjustment, Reform, and Privatization

**TOTAL: 45 PERIODS**



## TEXT BOOK

1. James M Cypher, "The Process of economic development", (2004), Routledge, U.K.
2. David Boyce Hamilton, "Evolutionary economics a study of change in economic thought", (1991), Transaction publishers, U.S.

## REFERENCES

1. Hollis Burnley, T.N. Srinivasan & Jere. R. Behrman, "Handbook of development economics, (1995), Elsevier, Amsterdam.
2. Gerald. M. Merier & Joseph M. Stiglitz, "Frontiers of development economics", 2001, Oxford University press, New York.
3. John.F. Mc Donald & Daniel P. Mc Millen, "Urban economics & real estate – Theory & Policy", (2007) – Blackwell Publishing, U.K.

## SEMESTER – II

<b>MR 9253</b>	<b>SERVICE IN HIGH RISE BUILDING DEVELOPMENT</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
		<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
<b>UNIT I</b>	<b>INTRODUCTION</b>				<b>6</b>
	Standards of high rise buildings – aspects and integration of services – relative costs – Concepts of intelligent architecture and building automation.				
<b>UNIT II</b>	<b>WATER COLLECTION SYSTEMS</b>				<b>10</b>
	Water storage and distribution – planning and design – selection of pumps – rainwater harvesting – sewage collection systems – recycling of water – solid waste disposal.				
<b>UNIT III</b>	<b>HVAC, ELECTRICAL AND MECHANICAL SYSTEMS</b>				<b>10</b>
	Natural and Mechanical ventilation systems – Air Conditioning – load estimation – planning and design – energy efficiency – automation – elevators – system – services – escalators – services – safety aspects.				
<b>UNIT IV</b>	<b>SAFETY AND SECURITY</b>				<b>9</b>
	Access – control – perimeter protection – CCTV -intruder alarms – passive fire safety – detection and alarm – planning and design – codes –NBC.				
<b>UNIT V</b>	<b>CASE STUDIES</b>				<b>10</b>
	Case based learning - High rise buildings and skyscrapers thro' appropriate examples.				

**TOTAL: 45 PERIODS**

## TEXT BOOKS

1. H. Vishwanath, "Multipurpose high – rise towers & tall buildings", (1998), Taylor & Francis, U.K.
2. Eisele, Johann, "High rise manual", (2003), Birkhavser.

<b>MR 9254</b>	<b>HERITAGE PROPERTIES AND CONSERVATION PRACTICES</b>	<b>L T P C</b>
		<b>3 0 0 3</b>

**UNIT I INTRODUCTION TO HERITAGE AND CONSERVATION 7**

Understanding heritage – heritage conservation – need – debate and purpose – defining conservation – preservation and adaptive reuse – International agencies – ICCROM, UNESCO and their role

**UNIT II CONSERVATION IN INDIA 8**

Museum – monument conservation – role of ASI – INTACH – Central and State Govt. – Policies – legislations – inventories – Projects – selected case studies – conservation project management

**UNIT III CONSERVATION PRACTICE 12**

Listing of monuments – documentation of historic structures – assessing character – report-guidelines for conservation – seismic retrofit – disabled access – historic site management.

**UNIT IV URBAN CONSERVATION 10**

Understanding the character, history of cities and historical sites – select case studies – historic districts – heritage precincts – financial incentives.

**UNIT V PLANNING TOOLS 8**

TDR-urban conservation and heritage tourism and national and international policies pertaining Heritage Conservation.

**TOTAL: 45 PERIODS**

**TEXT BOOKS**

1. Gerald Glenn, "Presentation & Rehabilitation", (1996), ASTM International.
2. A History of Architectural Conservation, (1<sup>st</sup> Pub.1999, Reprint 2005) – Elsevier Butterworth, Oxford, UK.

<b>MR 9255</b>	<b>ENVIRONMENTAL IMPACT ASSESSMENT TECHNIQUES</b>	<b>L T P C</b>
		<b>3 0 0 3</b>

**UNIT I INTRODUCTION 6**

EIA – Environmental Impact Assessment – EIS – Environmental Impact Statement – Environmental Risk Assessment (ERA) – Legal and regulatory aspects – types and limitations – terms of reference – issues – national – cross-sectional – social and cultural in EIA.

**UNIT II COMPONENTS AND METHODS 12**

Components – screening – setting – analysis- prediction of impacts – mitigation. Matrices – networks – checklists – important assessment techniques – cost benefit analysis – analysis of alternatives – methods of prediction and assessment of impacts – air – water – soil – noise – biological –social –cultural – standards and guidelines for evaluation – public participation in environmental decision making.



**REFERENCES:**

1. Richard T.T. Forman & Michel Godron, Landscape Ecology, John Wiley & Sons; 1986
2. Tom Turner, Landscape Planning and Environmental Impact Design, UCL Press, London, 1998.
3. Ervin H. Zube, Robert O Brush, Julios G.Y. Fabos, Landscape assessment – values, perceptions, 1975.
4. G. Tyler Miller Jr., Living in the Environment: Principles, Connections, and Solutions, Brooks / Cole publishers co., 2004.
5. William M. Marsh, Landscape planning – Environmental Application, John Wiley and sons Inc., 1997.

<b>MR 9257</b>	<b>CAPITAL MARKETS &amp; REAL ESTATE</b>	<b>L T P C</b>
		<b>3 0 0 3</b>
<b>UNIT I</b>		<b>9</b>
Globalization of capital markets – impact on real estate finance and investment – institutional investors – portfolio investment		
<b>UNIT II</b>		<b>9</b>
Capital theory and trade-offs over time – financial markets and economic efficiency – discounting – present value – compound interest arithmetic		
<b>UNIT III</b>		<b>9</b>
Financial Markets – Investment strategies – market hypothesis – innovations – Tobin’s Q – Portfolio selection. Investment Criteria – Present value – internal rate of return		
<b>UNIT IV</b>		<b>9</b>
Capital asset pricing theory – Asset allocation strategies – risk diversification – multi asset portfolios – benefits of capital market integration		
<b>UNIT V</b>		<b>9</b>
Development of real estate investment trusts (REIT) industry – development of market for real estate debt securities.		
		<b>TOTAL: 45 PERIODS</b>

<b>MR 9258</b>	<b>PERFORMANCE EVALUATION OF BUILDINGS</b>	<b>L T P C</b>
		<b>3 0 0 3</b>
<b>UNIT I</b>		<b>10</b>
Simulations and Design of Buildings – Principles of modeling and simulation – classification and validation of simulation models – analysis of input data and outputs – object oriented simulation (OSS) – Simulation languages – application of discrete event simulation in construction operations.		

**UNIT II** **10**  
Thermal Building Simulation – Models – heat and mass transfer – radiative and convective heat transfer – application to equipment – based modeling of HVAC systems – validation of computer models

**UNIT III** **15**  
Performance of Building Envelope – Modeling of dynamic building envelope thermal performance – thermal bridges – advanced glazing and evaluation of window performance – building envelope components for heat and moisture control – techniques for performance evaluation of the building envelope

**UNIT IV** **10**  
Energy Management in buildings – Energy related standards – codes – by laws – methods of assessment – energy performance – conventional – innovative measurement – analysis techniques – energy oriented techniques – replacement of building subsystems – prediction of energy – cost savings – software packages – verification of compliance with standards – life cycle analysis.

**TOTAL: 45 PERIODS**

**REQUIRED READING:**

1. Energy Audit of Building Systems – Moneef Krarti (Ph.D) – CRC Press 2000
2. Clarke, J.A., “Energy simulation in building design”, Adam Hilger Ltd, Bristol, 1985
3. ESRU, “ESP-r A Building Energy Simulation Environment; User Guide Version 9 Series. “ESRU Manual U 96/1, University of Strathclyde, Energy Systems Research Unit, Glasgow, 1996.
4. Kabele, K., “Modelling and analyses of passive solar systems with computer simulation”, in Proc. Renewable energy sources, PP. 39 – 44, Czech Society for Energetics Kromeriz 1998 (in Czech)

-----